<u>Amendments to the Claims:</u>

This listing of claims will replace all prior versions and listings of claims in the application:

<u>Listing of claims:</u>

1. (Currently Amended) A method for enhancing a thrust-minus-drag mathematical model of an aircraft<u>, the thrust-minus-drag mathematical model including a first thrust estimate based on acceleration, the method</u> comprising:

computing a <u>second</u> thrust estimate from data measured from at least one engine sensor; and

adding the <u>second</u> thrust estimate to the thrust-minus-drag mathematical model.

2. (Currently Amended) The method according to claim 1, wherein the <u>second</u> thrust estimate is added to the thrust-minus-drag mathematical model only during an aircraft cruise condition.

3. (Currently Amended) The method according to claim 1, wherein the at least one engine sensor is a sensor that provides <u>data for</u> at least one of ~~N1 and N2 data~~ <u>a rotational speed of a low pressure compressor (N1) and a rotational speed of a high pressure compressor (N2)</u>.

4. (Currently Amended) The method according to claim 1, wherein the at least one engine sensor is a sensor that provides ~~EPR data.~~ <u>engine pressure ratio (EPR) data.</u>

5. (Currently Amended) The method according to claim 1, wherein the at least one engine sensor is a sensor that provides ~~PLA data.~~ <u>power level angle (PLA) data.</u>

6. (Currently Amended) The method according to claim 1, wherein the step of computing a second thrust estimate comprises receiving data measured from engine sensors that provide ~~N1, N2, EPR, and PLA data.~~ rotational speed of a low pressure compressor (N1) data, rotational speed of a high pressure compressor (N2) data, engine pressure ratio (EPR) data, and power level angle (PLA) data.

7. (Currently Amended) The method according to claim 1, further comprising:

capturing at least one input parameter other than the second thrust estimate;

retrieving a valid data range for the one input parameter;

comparing the one input parameter to the valid data range for the input parameter;

notifying a pilot of a possible error if the input parameter is not within the valid data range; and

using the input parameter for the mathematical model if it is within the valid data range.

8. (Original) The method according to claim 7, further comprising taking an action other than notifying a pilot of a possible error if the input parameter is not within the valid data range.

9. (Original) The method according to claim 8, wherein the action other than notifying a pilot of a possible error comprises updating a database if the input parameter is not within the valid data range.

10. (Original) The method according to claim 7, wherein the input parameter is sensor data.

11. (Original) The method according to claim 7, wherein the input parameter is pilot entered data.

12. (Original) The method according to claim 1, further comprising:

capturing the values of at least two aircraft sensors that measure the same type of data;

retrieving a tolerance that represents an error for the type of data;

comparing the values of each of the sensors that measure the same type of data to each other;

notifying the pilot of a possible error if any two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data; and

using the data measured from at least one of the sensors that measure the same type of data for the mathematical model if no two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data.

13. (Original) The method according to claim 12, further comprising taking an action other than notifying a pilot of a possible error if any two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data.

14. (Original) The method according to claim 13, wherein the action other than notifying a pilot of a possible error comprises updating a database if any two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data.

15. (Original) The method according to claim 1, further comprising:

determining the values of at least two aircraft sensors that measure the same type of data;

retrieving a valid data range for the type of data;

comparing the values of each of the sensors that measure the same type of data to a valid data range for the type of data;

notifying the pilot of a possible error if none of the sensors that measure the same type of data has a value that is within the valid data range for the type of data; and

using the data measured from at least one of the sensors that measure the same type of data for the mathematical model if the at least one of the sensors that measure the same type of data is within the valid data range for the type of data.

16. (Original) The method according to claim 15, further comprising taking an action other than notifying a pilot of a possible error if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

17. (Original) The method according to claim 16, wherein the action other than notifying a pilot of a possible error comprises updating a database if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

18. (Currently Amended) The method according to claim 1, further comprising:

determining the values of at least two aircraft sensors that measure the same type of data;

retrieving a valid data range for the type of data;

comparing the values of each of the sensors that measure the same type of data to a valid data range for the type of data;

notifying the pilot of a possible error if none of the sensors that measure the same type of data ~~have~~ has a value that is within the valid data range for the type of data;

using the data measured from exactly one of the sensors that measure the same type of data for the mathematical model if the exactly one of the sensors that measure the same type of data is the only sensor reporting data within the valid data range for the type of data; and

using an average of sensor values that measure the same type of data and are within the valid data range for the type of data for the mathematical model.

19. (Original) The method according to claim 18, further comprising taking an action other than notifying a pilot of a possible error if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

20. (Original) The method according to claim 19, wherein the action other than notifying a pilot of a possible error comprises updating a database if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

21. (Currently Amended) A method for mathematically modeling the performance characteristics of an aircraft comprising:

computing a thrust-minus-drag mathematical model from measured fuel flow data, measured air data, measured attitude and acceleration data and pilot entered data, the thrust-minus-drag mathematical model including a first thrust estimate based on acceleration;

computing a second thrust estimate from data measured from at least one engine sensor; and

adding the second thrust estimate to the thrust-minus-drag mathematical model.

22. (Currently Amended) The method according to claim 21, wherein the second thrust estimate is added to the thrust-minus-drag mathematical model only during an aircraft cruise condition.

23. (Currently Amended) The method according to claim 21, wherein the at least one engine sensor is a sensor that provides data for at least one of ~~N1 and N2 data.~~ a rotational speed of low pressure compressor (N1) and a rotational speed of a high pressure compressor (N2).

24. (Currently Amended) The method according to claim 21, wherein the at least one engine sensor is a sensor that provides ~~EPR data~~ engine pressure ratio (EPR) data.

25. (Currently Amended) The method according to claim 21, wherein the at least one engine sensor is a sensor that provides ~~PLA data~~ power level angle (PLA) data.

26. (Currently Amended) The method according to claim 21, wherein the step of computing a second thrust estimate comprises receiving data measured from engine sensors that provide ~~N1, N2, EPR, and PLA data.~~ rotational speed of a low pressure compressor (N1) data,

rotational speed of a high pressure compressor (N2) data, engine pressure ratio (EPR) data, and power level angle (PLA) data.

27. (Currently Amended) The method according to claim 21, further comprising:

capturing at least one input parameter other than the second thrust estimate;

retrieving a valid data range for the one input parameter;

comparing the one input parameter to the valid data range for the input parameter;

notifying a pilot of a possible error if the input parameter is not within the valid data range; and

using the input parameter for the mathematical model if it is within the valid data range.

28. (Original) The method according to claim 27, further comprising taking an action other than notifying a pilot of a possible error if the input parameter is not within the valid data range.

29. (Original) The method according to claim 28, wherein the action other than notifying a pilot of a possible error comprises updating a database if the input parameter is not within the valid data range.

30. (Original) The method according to claim 27, wherein the input parameter is sensor data.

31. (Original) The method according to claim 27, wherein the input parameter is pilot entered data.

32. (Original) The method according to claim 21, further comprising:

capturing the values of at least two aircraft sensors that measure the same type of data;

retrieving a tolerance that represents an error for the type of data;

comparing the values of each of the sensors that measure the same type of data to each other;

notifying the pilot of a possible error if any two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data; and

using the data measured from at least one of the sensors that measure the same type of data for the mathematical model if no two of the sensors that measure the same type of data vary by more than the tolerance that represents an error for the type of data.

33. (Original) The method according to claim 32, further comprising taking an action other than notifying a pilot of a possible error if any two of the sensors that measure the same type of data vary by more than the percentage that represents an error for the type of data.

34. (Original) The method according to claim 33, wherein the action other than notifying a pilot of a possible error comprises updating a database if any two of the sensors that measure the same type of data vary by more than the percentage that represents an error for the type of data.

35. (Original) The method according to claim 21, further comprising:

determining the values of at least two aircraft sensors that measure the same type of data;

retrieving a valid data range for the type of data;

comparing the values of each of the sensors that measure the same type of data to a valid data range for the type of data;

notifying the pilot of a possible error if none of the sensors that measure the same type of data have a value that is within the valid data range for the type of data; and

using the data measured from at least one of the sensors that measure the same type of data for the mathematical model if the at least one of the sensors that measure the same type of data is within the valid data range for the type of data.

36. (Original) The method according to claim 35, further comprising taking an action other than notifying a pilot of a possible error if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

37. (Original) The method according to claim 36, wherein the action other than notifying a pilot of a possible error comprises updating a database if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

38. (Currently Amended) The method according to claim 21, further comprising:

determining the values of at least two aircraft sensors that measure the same type of data;

retrieving a valid data range for the type of data;

comparing the values of each of the sensors that measure the same type of data to a valid data range for the type of data;

notifying the pilot of a possible error if none of the sensors that measure the same type of data ~~have~~ has a value that is within the valid data range for the type of data;

using the data measured from exactly one of the sensors that measure the same type of data for the mathematical model if the exactly one of the sensors that measure the same type of data is the only sensor reporting data within the valid data range for the type of data; and

using an average of sensor values that measure the same type of data and are within the valid data range for the type of data for the mathematical model.

39. (Original) The method according to claim 38, further comprising taking an action other than notifying a pilot of a possible error if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

40. (Original) The method according to claim 39, wherein the action other than notifying a pilot of a possible error comprises updating a database if at least one of the sensors that measure the same type of data does not have a value that is within the valid data range for the type of data.

41. (Currently Amended) A system for mathematically modeling the performance characteristics of an aircraft comprising:

a thrust-minus-drag filter, whose outputs are used in performance prediction;

a maximum fuel flow rating filter, whose outputs are used in performance prediction; and

a mathematical engine model in communication with the thrust-minus-drag filter, wherein the engine model receives engine performance data, and wherein the mathematical

engine model provides a thrust estimate to the thrust-minus-drag filter based on engine performance data.

42. (Original) The system according to claim 41, wherein the thrust-minus-drag filter is a Kalman filter.

43. (Original) The system according to claim 41, wherein the fuel flow rating filter is a Kalman filter.

44. (Currently Amended) The system according to claim 41, wherein the engine performance data is ~~PLA data.~~ power level angle (PLA) data.

45. (Currently Amended) The system according to claim 41, wherein the engine performance data is at least one of ~~N1 and N2 data.~~ a rotational speed of a low pressure compressor (N1) and a rotational speed of a high pressure compressor (N2).

46. (Currently Amended) The system according to claim 41, wherein the engine performance data is ~~EPR data.~~ engine pressure ratio (EPR) data.

47. (Currently Amended) The system according to claim 41, wherein the engine performance data is ~~N1, N2, EPR, and PLA data.~~ rotational speed of a low pressure compressor (N1) data, rotational speed of a high pressure compressor (N2) data, engine pressure ratio (EPR) data, and power level angle (PLA) data.